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Bednarek et al.(10) **Pub. No.: US 2019/0381420 A1**(43) **Pub. Date: Dec. 19, 2019**(54) **PRESSURIZED VAPOR CYCLE LIQUID
DISTILLATION****B01D 3/42** (2006.01)**B01D 1/22** (2006.01)(71) Applicant: **DEKA Products Limited Partnership**,
Manchester, NH (US)(52) **U.S. Cl.****CPC** **B01D 1/2887** (2013.01); **Y10T 137/7764**
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ABSTRACT

Embodiments of the invention are directed toward a novel pressurized vapor cycle for distilling liquids. In some embodiments of the invention, a liquid purification system is revealed, including the elements of an input for receiving untreated liquid, a vaporizer coupled to the input for transforming the liquid to vapor, a head chamber for collecting the vapor, a vapor pump with an internal drive shaft and an eccentric rotor with a rotatable housing for compressing vapor, and a condenser in communication with the vapor pump for transforming the compressed vapor into a distilled product. Other embodiments of the invention are directed toward heat management, and other process enhancements for making the system especially efficient.

